



## **River planform anomalies on the Sebes Körös/Crişul Repede River in the sheets of the Habsburg military surveys**

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The Sebes-Körös (Crişul Repede) River takes its rise in the northern Apuseni Mts., and it flows through the eastern part of the Great Hungarian Plain (GHP). The Körös River System has meandering pattern, but along a few kilometers, the pattern is anastomosing. This section was along the present Hungarian-Romanian border, between Toboliu (Romania) and Berekböszörmény (Hungary). The natural evolution of this river section is followed in the sheets of the First and the Second Military Surveys, between 1783 and 1859. Some changes on the maps are because of the errors of the surveys but surprisingly a lot of them can be verified even the modern maps.

The river regulation was done between the Second and Third Surveys, so these latter sheets from the 1880s shows both the last natural and the planned regulated forms of the river. After the river controls, the new channel is almost straight, so we can not see this character afterwards. The position of the straight, controlled channel, shown in the Third Survey is also verified by the satellite images. In the satellite image we can still see the mark of the ancient anastomosing channels.

Rectification was made on these maps to convert them to the same coordinate system (Hungarian National Grid, EOV). After digitizing the channels from the rectified maps of the Second Military Survey we can compare the places and the pattern of the channel from the different times. We can overlay the digitized pattern on the maps of the First Military Survey to see, that the character of the river is about the same on the two maps, but the channels are in different places. This was, because the river was not controlled and it is a natural change. The channel sinuosity of this river is also analyzed in order to draw conclusions on the neotectonic activity of the area. The varying vertical movements change the river structure, so the sinuosity is also changes. Here, the low-sinuosity section suggests zone of rapid subsidence.